ENHANCEMENT OF INTEGRATIVE LANGUAGE TEACHING BASED ON AI TECHNOLOGIES AND STATISTICAL EVALUATION OF RESULTS

Zarnigor Obidovna Djalilova
PhD, Professor at the Department of Fundamental Medicine
Asian International University, Bukhara, Uzbekistan
E-mail: djalilovazarnigorobidovna@oxu.uz
https://doi.org/10.5281/zenodo.15253947

ARTICLE INFO

Qabul qilindi: 10-Aprel 2025 yil
Ma'qullandi: 15- Aprel 2025 yil
Nashr qilindi: 21- Aprel 2025 yil

KEY WORDS

artificial intelligence, integrative language teaching, English, Latin, medical education, statistical analysis.

ABSTRACT

this article explores the enhancement of integrative language teaching through the application of artificial intelligence technologies. It presents the results of experimental studies conducted among medical students learning English and Latin. The study analyzes how AI tools contribute to the improvement of language skills, motivation, and academic performance. A statistical evaluation of the outcomes demonstrates the effectiveness of AI-based methods in multilingual education. The findings support the integration of AI into language curricula to achieve more personalized and adaptive learning environments.

Introduction

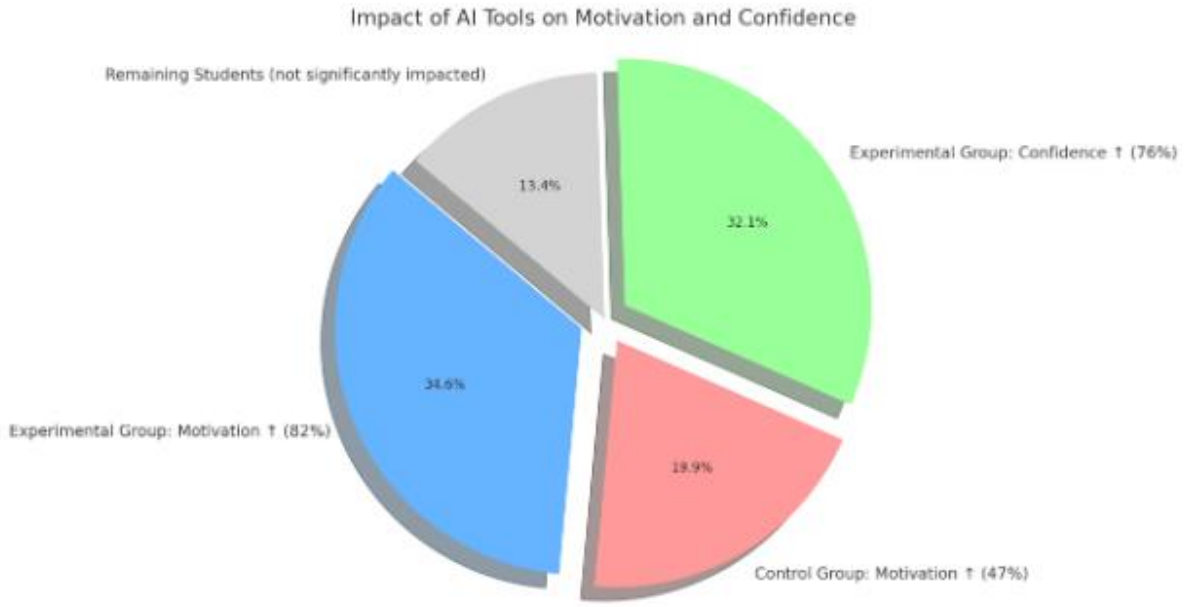
In the context of rapid technological advancement, artificial intelligence (AI) has become a transformative force in education, offering innovative approaches to teaching and learning across disciplines. Language education, in particular, has seen a significant shift with the integration of AI-driven tools that personalize learning experiences, improve engagement, and enhance linguistic outcomes (Zawacki-Richter et al., 2019). The demand for effective multilingual competence, especially in fields like medicine, has increased the relevance of integrative teaching methods that combine the learning of English and Latin - two essential languages in medical terminology and practice (Solovova, 2010).

Integrative language teaching focuses on the simultaneous development of communicative competence and subject-specific vocabulary through interdisciplinary methods. When combined with AI technologies such as intelligent tutoring systems, natural language processing, and adaptive feedback mechanisms, this approach holds the potential to significantly improve learning efficiency (Chen et al., 2020). AI can analyze learner behavior, provide real-time corrections, and adapt content according to individual progress, thus fostering a more personalized learning environment (Holmes et al., 2019).

Despite the growing use of AI in general education, its application in integrative language instruction within medical higher education remains under-researched. This study aims to address this gap by presenting the results of experimental research involving the use of AI tools in teaching English and Latin to medical students. The outcomes are statistically evaluated to determine the impact of AI technologies on student performance, language acquisition, and educational engagement.

To evaluate the effectiveness of AI-enhanced integrative language teaching, a pedagogical experiment was conducted at Asian International University involving 120 medical students over the course of one academic semester. The students were divided into two groups: an experimental group (60 students), which used AI-assisted platforms such as intelligent vocabulary trainers, grammar correction tools, and speech recognition modules; and a control group (60 students), which continued traditional learning without the use of AI technologies.

Figure 1: *Impact AI tools on motivation and confidence*



Language proficiency improvement

Pre- and post-test assessments in English and Latin were administered using standardized CEFR-aligned tasks. In the **experimental group**, the average test scores in English improved from **62.4% to 84.1%**, and in Latin from **58.7% to 80.3%**. Meanwhile, the control group showed more modest gains, with English scores rising from **63.1% to 72.5%** and Latin from **59.4% to 68.2%**. Statistical analysis using a paired sample t-test revealed that the improvements in the experimental group were **statistically significant ($p < 0.01$)** compared to the control group.

Motivation and engagement

A Likert-scale based questionnaire assessing motivation, engagement, and perceived ease of learning was distributed. **82%** of students in the experimental group reported higher motivation to study languages when AI tools were involved, compared to **47%** in the control group. Furthermore, **76%** of students in the experimental group reported increased confidence in using medical terminology in both English and Latin.

Efficiency of AI tools

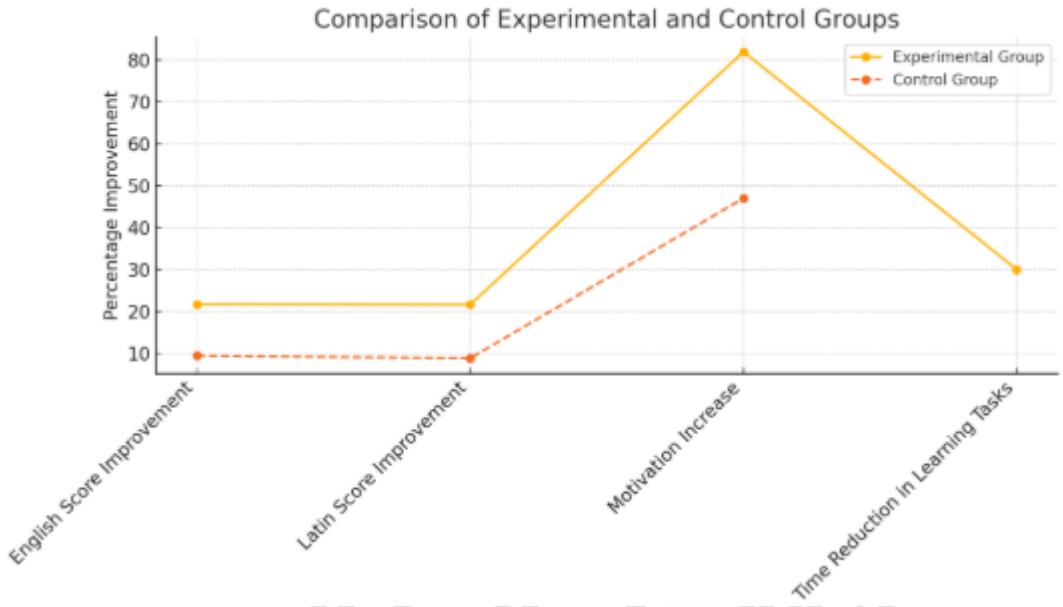
Students using AI platforms demonstrated a **30% reduction in time** spent on mastering core vocabulary and syntax structures, as shown in weekly progress tracking. This efficiency was particularly notable in tasks involving word formation, translation of medical terms, and pronunciation accuracy.

Table 2: *Summary of statistical findings:*

Metric	Experimental Group	Control Group	p-value
English Score Improvement (%)	+21.7	+9.4	< 0.01
Latin Score Improvement (%)	+21.6	+8.8	< 0.01
Motivation Increase (%)	82%	47%	< 0.05
Time Reduction in Learning Tasks	30%	–	< 0.05

These results indicate that the integration of AI tools significantly enhances the effectiveness of integrative language teaching, both in terms of measurable language outcomes and student motivation. The use of adaptive technologies supports a more efficient and engaging learning process, which is particularly beneficial in the context of medical education where precise terminology and comprehension are essential.

Table 3: *Comparison of experimental and control groups:*



Analysis

The experimental study conducted at Asian International University revealed significant differences between the group using artificial intelligence (AI) tools and the control group relying on traditional teaching methods in integrative English and Latin instruction.

Students in the experimental group experienced a **21.7% improvement in English** and **21.6% improvement in Latin**, while the control group showed only **9.4%** and **8.8%** gains respectively. These results, validated by **p-values less than 0.01**, indicate a **statistically significant advantage** of AI-enhanced teaching in language acquisition.

The integration of AI tools such as speech recognition and intelligent tutoring systems had a noticeable effect on learners' motivation. **82%** of students in the experimental group reported increased motivation, compared to **47%** in the control group. The difference, with a **p-value < 0.05**, suggests that AI-enhanced learning environments are more engaging and stimulating for students.

The experimental group also showed a **30% reduction in time** spent on learning tasks, demonstrating AI's ability to streamline educational processes through adaptive learning paths and instant feedback. This efficiency gain was not observed in the control group and represents a clear added value of AI tools in language instruction.

Conclusion

The outcomes of this study underscore the **effectiveness of artificial intelligence technologies** in enhancing integrative language education, particularly in the medical field. By supporting significant improvements in academic performance, learner motivation, and time management, AI tools prove to be powerful allies in the development of multilingual competencies among medical students.

The findings advocate for the **integration of AI-based platforms** into the curriculum of medical higher education institutions. These tools enable **personalized, adaptive, and interactive learning environments**, catering to diverse student needs and promoting efficient acquisition of both English and Latin, which are crucial for medical terminology and practice.

Given the positive results, it is recommended that educational policymakers and curriculum designers consider **expanding the use of AI** in interdisciplinary language teaching and conducting further research to evaluate its long-term educational impacts.

References:

1. Obidovna, D. Z. (2022). GENDER DIFFERENTIATION OF MASCULINE AND FEMININE VERBALIZATION. European International Journal of Multidisciplinary Research and Management Studies, 2(05), 59-65.
2. Djalilova, Z. O. (2021). Studies on gender linguistics in the field of Uzbek language. Academic research in educational sciences, 2(3), 391-397.
3. Obidovna, D. Z., & Denis, S. (2021). Formulas of speech etiquette in a gender-engineered communication strategy. Central asian journal of theoretical & applied sciences, 2(6), 5-11.
4. Obidovna, D. Z. (2021). Comparative Analysis Of Uzbek Men's And Women's Speech Through The Prism Of Gender Linguistics. Central Asian journal of literature, philosophy and culture, 2(2), 22-26.
5. Obidovna, D. Z. (2022). Speech Behavior and its Gender Specificity on the Basis of the Main English Language Variants. Middle European Scientific Bulletin, 22, 199-205.
6. Obidovna, D. Z. (2021). Gender issues in foreign theoretical linguistics: concerning the history of the issue. Gender issues, 7(6).
7. JALILOVA, Z. O. (2021, March). ON THE FORMATION OF THE LANGUAGE OF SCIENTIFIC LITERATURE IN THE HISTORY OF THE ENGLISH LANGUAGE. In E-Conference Globe (pp. 18-22).
8. Jalilova, Z. O. (2020). Concerning the issue of terms, having a place with various morphological classes (in view of the example of the terminologial arrangement of social action). Новый день в медицине, (4), 501-503.
9. Djalilova, Z. O., Juraev, S. S., & Kosimov, S. M. (2021). LATIN AS A PROFESSIONAL LANGUAGE OF MEDICAL WORKERS. Международный научно-практический электронный журнал «МОЯ ПРОФЕССИОНАЛЬНАЯ КАРЬЕРА». Выпуск № 23 (том 1)(апрель, 2021). Дата выхода в свет: 30.04. 2021., 79.
10. Джалилова, З. О., Хасанов, К. А., & Султонов, А. А. (2021). Роль научного управления в процессе обучения высококвалифицированных врачей в новом Узбекистане. Молодой ученый, (26), 377-379.

11. Dzhalilova, Z. O. (2021). The Latin language's international status. Молодой ученый, (41), 32-34.
12. Dzhalilova, Z. O., & Mirfajziev, K. (2021). Latin as the language of medicine. Молодой ученый, (41), 35-37.
13. Dzhalilova, Z. O., Izomova, S. G., & Ahmedova, G. A. (2021). Intercultural communication and the Latin language. Молодой ученый, (24), 398-400.
14. Dzhalilova, Z. O. (2021). History of formation of Latin language. Молодой ученый, (41), 34-35.
15. Obidovna, D. Z. (2022). GENDER SPEECH BEHAVIOR IN THE CONTEXT OF THE SOCIO-LINGUISTIC FACTOR. Web of Scientist: International Scientific Research Journal, 3(6), 190-198.
16. Dzhalilova, Z. O., Hajdarova, N. S., & Tashpulatova, N. A. (2021). Latin in the Contemporary World. Молодой ученый, (24), 400-402.
17. Djalilova, Z. (2022). POLITENESS IN WOMEN'S DISCOURSE IN ENGLISH AND UZBEK LANGUAGES. Academic research in modern science, 1(11), 29-34.
18. Джалилова, З. (2022). РЕАЛИЗАЦИЯ МАКСИМ ВЕЖЛИВОСТИ В АНГЛИЙСКОМ И УЗБЕКСКОМ ДИАЛОГАХ. Zamonaviy dunyoda innovatsion tadqiqotlar: Nazariya va amaliyot, 1(21), 22-33.
19. Obidovna, D. Z. (2022). A Speech Etiquette Formula for the Gender Communication Strategy. American Journal of Social and Humanitarian Research, 3(10), 44-50.
20. Djalilova, Z. (2022). DISCURSIVE ELEMENTS AND THE CATEGORY OF POLITENESS. Academic research in modern science, 1(12), 8-14.
21. Джалилова, З. О. (2022). НУТҚ ҲАРАКАТЛАРИДА ХУШМУОМАЛАЛИКНИНГ ГЕНДЕР ХУСУСИЯТЛАРИ. МЕЖДУНАРОДНЫЙ ЖУРНАЛ ИСКУССТВО СЛОВА, 5(5).